



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/637,047	08/11/2000	Fan Zhou	FORE-74	7203

7590

02/17/2006

Ansel M. Schwartz
One Sterling Plaza
Suite 304
201 N. Craig Street
Pittsburgh, PA 15213

EXAMINER

MOORE, IAN N

ART UNIT	PAPER NUMBER
2661	

DATE MAILED: 02/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/637,047	Applicant(s) ZHOU ET AL.	
	Examiner Ian N. Moore	Art Unit 2661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-14 and 16-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-9,14 and 16-21 is/are rejected.
- 7) ☒ Claim(s) 10-13 and 22-24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1,3-8,14, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sindhu (U.S. 5,905,725) in view of Cyr (US005412646A).

Regarding Claims 1 and 14, Sindhu discloses a switch for switching packets (see FIG. 2B, Router 20) from a plurality of sources (see FIG. 2B and 3, Input ports 107; see col. 4, lines 16-20, 24-25,28-30) comprising:

a port card (see FIG. 2B, a combined system of input port 107 and output port 108) having a striper (see FIG. 3, Data Handler 304 of input port 107);

a fabric (see FIG. 2B, a combined system of input switch 100, memory 104, controller 106, and output switch 102 are a fabric of the router 100; see col. 4, lines 20-30), the striper sending portions of the packet as striper to the fabric (see col. 6, lines 57-65; Data Handler 302 of the multiport divides the packets received onto fix length cells and send to the input switch A1), the fabric having

a memory (see FIG. 2B and 5B, Memory 104) in which portion of the packet (see col. 4, lines 53-60; fixed length cells 454,456) are stored (see col. 4, lines 31-34); and

a transferring mechanism (see FIG. 2B and 5B, Input Switch 100) which transfers a predetermined portions of a packet (see FIG. 5B, fixed length cell 454, 456; see col. 4, lines 53-

Art Unit: 2661

60) to the to the memory as the predetermined portions are received (see FIG. 5B, fixed size cell 450, 452) transferring predetermined portions of the packet as fixed length segments as the fixed length segments are received (see FIG. 3, Data handler 304 of Input port 107 segments the packet into fixed sized cell, thus input switch 100 received fixed length cell; see col. 4, lines 52-64) followed by a single final segment of any length (see col. 7, lines 53-54; arbitrary length) less than or equal to the length of the fixed length segments (see col. 7, lines 50-55; note that the last cell is arbitrary length of less than or equal to the fixed sized cell length since the packet is divided into fixed length) wherein the packet is transferred to the memory (see FIG. 5B, series of cells 454,456 toward memory 104) to smooth out bursts caused by lengthy packets (see col. 2, lines 14-35).

Sindhu does not explicitly disclose a plurality of fabrics. However, the use of more than one fabric is well known in the art. In particular, Cyr teaches a plurality of fabrics (see FIG. 3, Expand/Concentrator 70 1-j), a striper (see FIG. 3, Multiplexer/cell slicer 60) sending portions of the packet as stripes to each fabric (see FIG. 3, sending cell segments 1-j to each expand/concentrator 70; see col. 2, line 44 to col. 3, line 9; see col. 3, line 17-26). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide plurality of fabrics, as taught by Cyr in the system of Sindhu, so that it would provide switch architecture in which each device process a particular segment (slice) of every incoming cells, rather than entire cell; see Cyr col. 1, line 39-63.

Regarding claims 3 and 16, Sindhu discloses the transferring mechanism transfers fixed length segment of different packets (see FIG. 5B, different fixed sized cells, 454,456) interleaved among each other as they are received to the memory (see FIG. 5A, Round robin data handler

Art Unit: 2661

500 and output processor 505; note that the cells from each incoming port are multiplexed, by utilizing time division multiplexing scheme, and then sending them to the memory. Thus, the “interleaving” process is the “time division multiplexing” process; see col. 6, lines 1-14).

Regarding claim 4, Sindhu discloses the transferring mechanism (see FIG. 5B, Input Switch 100) includes an aggregator (see FIG. 5B, Round Robin Data Handler 500; see col. 6, lines 1-14) which receives portions of packets (see FIG. 5B, fixed length cells 450,452) from the plurality of sources (see FIG. 5B, B0-B7; sources stations which connect to Input ports 107; see col. 4, lines 16-20, 24-25,28-30).

Regarding claim 5, Sindhu discloses a memory (see FIG. 2B, Memory 104) and memory controller (see FIG. 2B, controller 106) for storing and controlling processes.

Sindhu does not explicitly disclose a memory includes a memory controller. However, a memory includes a memory controller is well known in the art. In particular, Cyr teaches wherein a memory includes a memory controller (see FIG. 4, a storage/memory system in expand/concentrator 70 includes FIFO control 75; see col. 3, line 34-49). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a memory controller, as taught by Cyr in the system of Sindhu, so that it would provide switch architecture in which each device process a particular segment (slice) of every incoming cells, rather than entire cell; see Cyr col. 1, line 39-63.

Regarding claims 6 and 18, Sindhu discloses wherein the aggregator uses TDM to multiplex segments of packets from different sources to the memory controller (see col. 2, lines 30-42; see col. 6, lines 1-14).

Regarding claims 7 and 19, Sindhu discloses placing an identifier (see FIG. 6, a data structure of Key 602, full address 604, and offset 606) with each segment identifying from which source (see FIG. 2A, a packet from Input port 107) the segments came from (see col. 6, lines 26-40; see col. 4, lines 36-39).

Regarding claims 8 and 20, Sindhu discloses wherein memory controller includes per source queues (see FIG. 11A, Memory banks 105), and stores each segment in a corresponding per source queue based on the identifier of the source (see col. 6, lines 32-65; see col. 9, lines 18-44).

Regarding claim 17, Sindhu discloses receiving portions of packets (see FIG. 5B, fixed length cells 450,452) from the different sources (see FIG. 5B, B0-B7; sources stations which connect to Input ports 107; see col. 4, lines 16-20, 24-25,28-30) at an aggregator (see FIG. 5B, Round Robin Data Handler 500; see col. 6, lines 1-14) of the transferring mechanism disposed in a fabric of the switch (see FIG. 2B, a combined system of input switch 100, memory 104, controller 106, and output switch 102 are a fabric of the router 100; see col. 4, lines 20-30).

3. Claims 9 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sindhu in view of Cyr, as described above in claims 1,3-8,14,16-20, and further in view of Diaz (US005361255A).

Regarding Claims 9 and 21, Sindhu discloses wherein memory controller includes per source queues (see FIG. 11A, Memory banks 105), and stores each segment in a corresponding per source queue (see col. 6, lines 32-65; see col. 9, lines 18-44). Cyr discloses once all segments for a packet are received, all the segments of the packets are changed from a per source queue

(see FIG. 4-6, once all cell slices in FIFO 74 in Unit 72 are received) to a corresponding per destination/output (see FIG. 3, 5; cells slices are switched/moved/changed to corresponding output/destination 80); see col. 3, line 3446; see col. 4, line 10 to col. 5, line 12).

Neither Sindhu nor Cyr explicitly disclose per destination queues. However, Diaz discloses a switch fabric/circuitry (see FIG. 1, Switching circuitry 16) includes per destination queues (see FIG. 1, Output buffers 34), and the segments for the packets (see col. 5, line 24-28; see col. 6, line 33-77; segments) received at a per source queue (see FIG. 1, Input buffers 30) are changed to a corresponding per destination queues (see col. 4, line 45 to col. 5, line 15; see col. 5, line 48 to col. 6, line 60; segments from input buffers are switched/moved/changed to corresponding output buffers). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide per destination queues, as taught by Diaz, in the combined system of Sindhu and Cyr, so that it would allow for large switching capabilities with minimum propagation delays and delay variances, and also provide non-blocking switching property; see Diaz col. 1, line 26 to col. 4, line 2.

Allowable Subject Matter

4. Claims 10-13 and 22-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

5. Applicant's arguments with respect to claims 1,3-9, 14, and 16-21 have been considered but are moot in view of the new ground(s) of rejection.

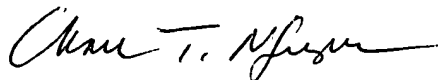
Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ian N. Moore whose telephone number is 571-272-3085. The examiner can normally be reached on 9:00 AM- 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on 571-272-3126. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gmm
INM
2-8-06



CHAU NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600